



U.S. Department of Agriculture
Forest Service
333 SW 1st, P.O. Box 3623
Portland, Oregon 97208

U.S. Department of the Interior
Bureau of Land Management
1515 S.W. 5th Avenue - P.O. Box 2965
Portland Oregon 97208

December 1999

*Draft –
Supplemental Environmental
Impact Statement*

**For Amendment to the
Survey and Manage,
Protection Buffer, and
Other Mitigating
Measures Standards
and Guidelines**

*Forest Service National Forests in Region 5 and 6 and the
Bureau of Land Management Districts in California, Oregon
and Washington within the Range of the Northern Spotted Owl*

BLM/OR/WA/PL-00/010+1792



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Lead Agencies:

Forest Service - U.S. Department of Agriculture
Bureau of Land Management - U.S. Department of the Interior

Cooperating Agency:

Fish and Wildlife Service - U.S. Department of the Interior

Responsible Officials:

Dan Glickman, *Secretary of Agriculture*
Bruce Babbitt, *Secretary of the Interior*

MAIL COMMENTS TO:
Survey and Manage SEIS
Content Analysis Enterprise Team
Attn: USDA Forest Service - CAET
P.O. Box 221090
Salt Lake City, UT 84122

Information Contact:

Hugh Snook, BLM Oregon State Office, P.O. Box 2965, Portland, Oregon 97208 (503) 808-2197- Comments are due by March 3, 2000.

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*To the dear lone lands untroubled of men
Where no voice sounds, and amid the shadowy green
The little things of the woodland live unseen*

And shall not loveliness be loved forever?

*Bacchae
Euripides
5th Century BC*



Figure 1

Abstract

The Forest Service and Bureau of Land Management propose to modify the Survey and Manage and other related species-specific mitigation measures for some rare and/or localized species on National Forests and Bureau of Land Management (BLM) lands within the range of the northern spotted owl. These mitigation measures are contained within the standards and guidelines of the Northwest Forest Plan (NFP) Record of Decision (USDA, USDI 1994b). This Supplemental Environmental Impact Statement (SEIS) presents three action alternatives to better identify protections needed, clarify language, eliminate inconsistent and redundant direction, and establish a process responsive to new information. Alternative 1 redefines Survey and Manage categories based on species characteristics. Alternative 2 is the same as Alternative 1 except that it removes or reassigns the 53 “uncommon” species within 5 years. Alternative 3 also builds on Alternative 1 by adding equivalent-effort surveys for rare and uncommon species for which pre-disturbance surveys are not practical and prescribing 250-meter buffers for rare sites. The preferred alternative is Alternative 1 because, based on the Draft SEIS, it best meets the underlying needs of clarifying and improving the Survey and Manage Standards and Guidelines while providing a balance between species protection and a predictable and sustainable level of timber and other outputs. Based on public comments and further analysis of this SEIS, the Agencies may, among other things, make factual corrections, modify alternatives including the Preferred Alternative, or supplement or modify its analysis (40 CFR 1503.4). The alternatives do not change the underlying purpose of the Northwest Forest Plan and do not address changes to other elements of the plan. The SEIS will supplement the *Final Supplemental Environmental Impact Statement on Management of Habitat for Late-Successional and Old-Growth Forest Related Species Within the Range of the Northern Spotted Owl* (USDA, USDI 1994a). The Record of Decision for this SEIS will amend the management direction, as identified herein, in existing Forest Service and Bureau of Land Management plans within western Oregon, western Washington, and northwestern California.

Notice

Readers should note that the Secretary of Agriculture and the Secretary of Interior are the responsible officials for this proposed action. Therefore, no administrative review (“appeal”) through the Forest Service will be available on the Record of Decision under 36 CFR 217, and no administrative review (“protest”) through the BLM will be available on the Record of Decision under 43 CFR 1610.5-2.

To enable the Forest Service and Bureau of Land Management to fully analyze and use all information acquired during the review of this Draft SEIS, reviewers need to provide their comments during the established review period. Reviewers have an obligation to structure their participation to be meaningful and to alert the Agencies to their position and contentions (*Vermont Yankee Nuclear Power Corp. v. NRDC*, 435 US 519,553 [1978]).

Comments on this Draft SEIS should be as specific as possible and address the adequacy of the statement, the merits of the alternatives discussed, or both.

Summary

Introduction

This Draft Supplemental Environmental Impact Statement (Draft SEIS) assesses three action alternatives for amending the species-specific management direction for some rare and/or localized species on National Forests and Bureau of Land Management (BLM) Districts in the Pacific Northwest and northern California. This management direction is contained in the land and resource management plans for National Forests and BLM units and in *The Northwest Forest Plan* (NFP) Record of Decision (USDA, USDI 1994b) and was analyzed in the Northwest Forest Plan FSEIS (USDA, USDI 1994a) which is incorporated as part of this SEIS (Appendix A) and to which this SEIS is a Supplement. The underlying needs and the purpose for developing this Supplemental Environmental Impact Statement are described in Chapter 1 and summarized below.

The selected alternative would amend those standards and guidelines in the Northwest Forest Plan that address Survey and Manage, Protection Buffers, Protection for Bats, Management of Recreation Sites to Minimize Disturbance to Species, and Protect Sites From Grazing. No species listed as “threatened” or “endangered” under the Endangered Species Act will be affected by amending these standards and guidelines. No other changes to the Northwest Forest Plan are being considered in this SEIS; there are no changes to major land allocations other than minor acreages of Late-Successional and Managed Late-Successional Reserves created by Protection Buffers, nor are there any changes to other management direction.

Background

The Northwest Forest Plan, adopted in April of 1994, provides for management of habitat for late-successional and old-growth forest related species. It is based primarily on a system of Late-Successional, riparian, and other reserves designed to provide for the habitat needs of more than 1,000 species associated with late-successional or old-growth forests on federal lands in the western portions of Washington, Oregon, and northern California. When the Northwest Forest Plan was being prepared, a concern was expressed that certain species might be so rare or isolated that the system of reserves and other elements of the Plan might not assure stable, well-distributed populations on federal lands.

To mitigate possible adverse effects to these species, mitigation measures were established in the Plan. These are Survey and Manage, Protection Buffers, Protection for Bats, Management of Recreation Sites to Minimize Disturbance to Species, and Protect Sites From Grazing. The intent of these species-specific measures was to benefit bryophytes (mosses and liverworts), fungi, lichens, mollusks (snails, slugs, and clams), amphibians (salamanders and frogs), vascular plants (plants with stems), birds (five species), mammals (lynx, red tree vole, and seven species of bats), and four groups of arthropods.

In the five years since adoption of the Northwest Forest Plan, much new information has been gained about the 414 species protected by the Survey and Manage and related species-specific standards and guidelines. Although the new information indicates that objectives for managing these species are being met, it also shows a need to correct several problems with these specific standards and guidelines. These problems result in protections beyond the level needed to meet some species objectives, difficulties in implementing the standards and guidelines, inefficient use of funds and personnel, and restrictions to timber harvest, restoration, and other management activities beyond those envisioned in the Northwest Forest Plan or needed to provide a reasonable assurance of persistence.

The Proposed Action

The Agencies are proposing to amend portions of the Northwest Forest Plan to improve the efficiency and consistency in applying mitigation measures, while continuing to provide a reasonable level of assurance for persistence of the late-successional and old-growth forest associated species addressed by the Survey and Manage and related standards and guidelines in the Northwest Forest Plan. While retaining the overall strategy for mitigation, the three action alternatives considered in this SEIS would modify how the Agencies provide mitigation for certain species. Since the scope of this action is narrow, existing plans would continue largely, though not entirely, unmodified by any of the action alternatives.

The proposed action is to modify some of the mitigation measures identified above in the Background section of this summary. To respond to the Purpose and Need, the action alternatives variously:

- Redefine the Survey and Manage categories to better reflect the current relative rarity of the species.
- Clarify management direction and objectives for the various categories.
- Assign some species to categories that provide a different level of protection to more correctly align protection levels with the needs of the species.
- Define the process for changing protection levels for species, and for adding or removing species protection, based on changes in their relative rarity.
- Consolidate Protection Buffer and Protect From Grazing measures with similar Survey and Manage measures to eliminate redundancy.
- Clarify and amend other species-specific measures, including those for bats, and apply them to all Northwest Forest Plan land-use allocations.
- Clarify when activities require surveys.
- Clarify which activities require pre-disturbance surveys.

A decision to select one of the action alternatives presented in this Supplemental Environmental Impact Statement would amend the management direction in all existing Forest Service land and resource management plans and Bureau of Land Management resource management plans in the area of the Northwest Forest Plan (range of the northern spotted owl). The new direction would be effective on the date the decision is signed.

The Alternatives

This SEIS assesses four alternatives: No-Action and three action alternatives designed to accomplish the proposed action. The action alternatives combine and clarify the Survey and Manage, Protection Buffer, and certain other species-specific standards and guidelines in the Northwest Forest Plan. The alternatives apply to lands administered by the Forest Service and the Bureau of Land Management (BLM) within the range of the Northwest Forest Plan.

The Survey and Manage and other standards and guidelines proposed for amendment in the action alternatives were generally added as mitigation measures to the Northwest Forest Plan. These mitigation measures added protections for species for which there remained some concerns for persistence after the primary management strategies of the Plan were designed. The action alternatives propose to combine and clarify those measures to improve management efficiency and effectiveness, while meeting the underlying purpose and need in the Northwest Forest Plan. Many of the processes and procedures already established for implementing the current standards and guidelines would remain in place under the action alternatives. The alternatives do not propose to

amend any aspect of the Northwest Forest Plan not specifically addressed in the alternatives.

The No-Action Alternative

The No-Action Alternative would continue the current direction, as provided in the Northwest Forest Plan Record of Decision (USDA, USDI 1994b), for the Survey and Manage and other mitigation measures described in the Introduction section of this SEIS. The Survey and Manage direction involves applying one or more of four possible categories to each of approximately 400 species or species groups. The four Survey and Manage categories are: Manage Known Sites, Survey Prior to Ground-Disturbing Activities, Extensive Surveys, and General Regional Surveys. The Northwest Forest Plan FSEIS Record of Decision defines, on Table C-3 ((included in Appendix B of this SEIS in the Standards and Guidelines of the No-Action Alternative), which categories apply to which species or species groups. No clear criteria are provided to indicate why a species belongs in a certain category, and also no specific provision exists for adding or removing a species, or for moving a species from one category to another when there is new information.

The Protection Buffer direction applies to 23 species, as discussed in Appendix B of this SEIS. Individual sites for 8 of the species become Late-Successional Reserves (LSRs); sites for 10 species become Managed Late-Successional Areas (MLSAs); and sites for 5 species add management direction within Matrix. Thirteen of the 23 Protection Buffer species are also included in Survey and Manage, which provides partially overlapping protection.

The standard and guideline to Manage Recreation Areas to Minimize Disturbance to Species does not name any specific species, nor does it apply to specific additional direction. It was included to remind federal managers that the Survey and Manage standards and guidelines apply to disturbances in recreation sites the same as for timber sales and other ground-disturbing activities.

The standard and guideline to Protect Sites From Grazing applies to 10 species of mollusks and 1 vascular plant species deemed particularly sensitive to grazing. Most species included in this direction are also in the Survey and Manage Standard and Guidelines.

The standard and guidelines to provide additional protection for bats add direction in the Matrix and Adaptive Management Area land allocations to protect caves, mines, and abandoned wooden bridges and buildings that bats use as roost sites. Controversial portions of this standard and guideline involve the need to handle bats for species identification and winter surveys that disturb hibernation.

The Action Alternatives

The three action alternatives combine Protect from Grazing species and most Protection Buffer species into Survey and Manage. The alternatives redefine Survey and Manage categories based on knowledge and concerns about the species and characteristics affecting practicality of surveys prior to habitat-disturbing activities. The number of categories and the management direction that apply to the species varies by alternative as shown on Table S-1 on the following page, and as described in further detail for each alternative. Each category has specific written criteria for assigning species to that category. Sixty-four species would be removed from Survey and Manage because other

elements of the Northwest Forest Plan provide a reasonable assurance of persistence, the species are not closely associated with late-successional forests, or the species are not found in the range of the Northwest Forest Plan. The remaining 343 species are assigned to categories as shown below.

Although the action alternatives redefine Survey and Manage categories for clarity and efficiency, all four alternatives (including the No-Action Alternative) provide for various mixes of three elements of management direction: manage known sites, pre-disturbance surveys, and strategic surveys (extensive and regional surveys in the No-Action Alternative). Table S-1 shows the number of species under these three management elements, by alternative, as well as the number of species that would be removed from Survey and Manage. Some species would receive more than one management direction (Table S-2).

Table S-1. Number of Species in Each Management Direction Element by Alternative.

Management Direction	Alternative			
	No-Action	Alternative 1	Alternative 2	Alternative 3
Manage Known Sites	265	318	290	343
Pre-Disturbance Surveys	85	60	49	318
Strategic Surveys	332	343	343	343
Remove From Survey and Manage	--	64 (and 7 in part of their range)	64 (and 7 in part of their range)	64 (and 7 in part of their range)

Table S-2. Comparison of Categories for Alternatives 1, 2 and 3 Based on Relative Rarity, Practicality of Pre-Disturbance Surveys, and Status.¹**Alternative 1 - Redefine Categories Based on Species Characteristics**

Relative Rarity	Pre-Disturbance Surveys Practical	Pre-Disturbance Surveys Not Practical	Status Undetermined
Rare	Category 1A - 49 species •Manage All Known Sites •Pre-Disturbance Surveys •Strategic Surveys	Category 1B - 197 species •Manage All Known Sites •N/A •Strategic Surveys (5 yrs.)	Category 1E - 44 species •Manage All Known Sites •N/A •Strategic Surveys
Uncommon	Category 1C - 11 species •Manage High-Priority Sites •Pre-Disturbance Surveys •Strategic Surveys	Category 1D - 17 species •Manage High-Priority Sites •N/A •Strategic Surveys	Category 1F - 25 species •N/A •N/A •Strategic Surveys

Alternative 2 - Remove or Reassign Uncommon Species Within 5 Years

Relative Rarity	Pre-Disturbance Surveys Practical	Pre-Disturbance Surveys Not Practical	Status Undetermined
Rare	Category 2A - 49 species •Manage All Known Sites •Pre-Disturbance Surveys •Strategic Surveys	Category 2B - 197 species •Manage All Known Sites •N/A •Strategic Surveys (5 yrs.)	Category 2C - 44 species •Manage All Known Sites •N/A •Strategic Surveys
Uncommon	Category 2D - 53 species •Manage All Sites Known as of 9/30/99-----> •No Pre-Disturbance Surveys -----> •Strategic Surveys Completed in 5 years ----->		

Alternative 3 - Add Equivalent-Effort Surveys and 250-Meter Rare Site Buffers

Relative Rarity	Pre-Disturbance Surveys Practical	Pre-Disturbance Surveys Not Practical	Status Undetermined
Rare	Category 3A - 290 species •Manage All Known Sites with 250-Meter Buffers-----> •Pre-Disturbance Surveys -----> Equivalent-Effort Surveys-----> •Strategic Surveys----->		
Uncommon	Category 3B - 28 species •Manage High-Priority Sites-----> •Pre-Disturbance Surveys---> Equivalent-Effort Surveys--> •Strategic Surveys----->		Category 3C - 25 species •Manage all Known Sites •N/A •Strategic Surveys

¹Details on management direction is in the text describing alternatives. The number of species in each category is per date of this DSEIS, and will change over time as described in the Adaptive Management section of each alternative.

Alternative 1 - The Preferred Alternative

Alternative 1 is designed to provide approximately the same level of protection as the Northwest Forest Plan. Survey and Manage species are grouped into six categories (1A-1F) based on level of relative rarity, ability to reasonably and consistently locate sites during surveys prior to implementing habitat-disturbing activities, and the level of information known about the species (see below). For a list of these species by category, see Table 2-2, Species to be Protected Through Survey and Manage for All Alternatives, at the end of Chapter 2.

Like Alternatives 2 and 3, this alternative combines most standards and guidelines for Protection Buffer and all those for Protect from Grazing into Survey and Manage, and edits and moves the remaining standards and guidelines for Protection Buffers and those for Additional Protection for Bats to “Standards and Guidelines Common to All Land Allocations.”

Alternative 1 proposes to remove 64 species from Survey and Manage, and includes an Adaptive Management section that defines how to change species among the six categories and how to add or remove species from Survey and Manage when there is new information.

All six categories in Alternative 1 require strategic surveys. These surveys are designed to address specific questions for Survey and Manage species regarding concerns related to persistence and the need to manage to provide for species persistence.

Alternative 1 - Redefine Categories Based on Species Characteristics			
Relative Rarity	Pre-Disturbance Surveys Practical	Pre-Disturbance Surveys Not Practical	Status Undetermined
Rare	<u>Category 1A</u> - 49 species •Manage All Known Sites •Pre-Disturbance Surveys •Strategic Surveys	<u>Category 1B</u> - 197 species •Manage All Known Sites •N/A •Strategic Surveys (5 yrs.)	<u>Category 1E</u> - 44 species •Manage All Known Sites •N/A •Strategic Surveys
Uncommon	<u>Category 1C</u> - 11 species •Manage High-Priority Sites •Pre-Disturbance Surveys •Strategic Surveys	<u>Category 1D</u> - 17 species •Manage High-Priority Sites •N/A •Strategic Surveys	<u>Category 1F</u> - 25 species •N/A •N/A •Strategic Surveys

Six Categories of Alternative 1

Category 1A - Rare species for which pre-disturbance surveys are practical. The objective of this category is to manage all known sites and minimize inadvertent loss of undiscovered sites. Management direction includes: manage all known sites, survey prior to habitat-disturbing activities, and conduct strategic surveys.

Category 1B - Rare species for which pre-disturbance surveys are not practical. The objective of this category is to manage all known sites and minimize inadvertent loss of undiscovered sites. Management direction includes: manage all known sites and conduct strategic surveys.

Category 1C - Uncommon species for which pre-disturbance surveys are practical. The objective of this category is to identify and manage high-priority sites to provide for species persistence. Until high-priority sites can be determined, all known sites are managed. Management direction includes: manage high-priority sites, survey prior to habitat-disturbing activities, and conduct strategic surveys.

Category 1D - Uncommon species for which pre-disturbance surveys are not practical or not necessary. The objective of this category is to identify and manage high-priority sites to provide for species persistence. Until high-priority sites can be determined, all known sites are managed. Management direction includes: manage high-priority sites and conduct strategic surveys.

Category 1E - Rare species for which status is undetermined. The objective is to manage all known sites while determining if the species meets the basic criteria for Survey and Manage and, if so, identify to which category it should be assigned. Management direction includes: manage all known sites and conduct strategic surveys.

Category 1F - Uncommon species for which status is undetermined. The objective is to determine if the species meets the basic criteria for Survey and Manage and, if so, identify to which category it should be assigned. Management direction includes: conduct strategic surveys

As in the other action alternatives, all Protection Buffer species are moved to Survey and Manage categories except six species that are either dropped from these standards and guidelines, or are moved to “standards and guidelines common to all land allocations.” The standard and guideline for Managing Recreation Areas to Minimize Disturbance to Species is deleted because it is not necessary for species persistence. Species and species groups associated with the standard and guideline Protect Sites From Grazing are moved to Survey and Manage, except for one species that is removed from this standard and guideline. The standard and guideline that Provides Additional Protection for Bats is modified to place management details into a Management Recommendation document to facilitate updating as new information is learned about the species.

Alternative 2

Alternative 2 is identical to Alternative 1 for the “rare” species. Alternative 2 assumes that the 53 “uncommon” species may be the next ones to be removed from Survey and Manage and seeks to expedite that decision by concentrating efforts on completing strategic surveys within 5 years. Building on the classification system used in Alternative 1, Alternative 2 redefines Survey and Manage into four categories (2A-2D) based on relative rarity, the ability to reasonably and consistently locate sites during surveys prior to implementing habitat-disturbing activities, and the level of information known about the species (see below and Table S-2). The assignment of species into these four categories is shown on Table 2-2 (located at the end of Chapter 2).

Like Alternatives 1 and 3, this alternative combines most standards and guidelines for Protection Buffer and Protect from Grazing into Survey and Manage, and edits and moves the remaining standards and guidelines for Protection Buffers and Additional Protection for Bats to “Standards and Guidelines Common to All Land Allocations.” Species moved from standards and guidelines for Protection Buffers or Grazing to Survey and Manage are also included on Table 2-2, Species to be Protected Through Survey and Manage, All Alternatives.

Alternative 2 proposes to remove 64 species from Survey and Manage, and includes an Adaptive Management section that defines how to change species among the three “rare” categories and how to add or remove species from Survey and Manage when there is new information.

All four categories in Alternative 2 require strategic surveys. These surveys are designed to address specific questions for Survey and Manage species regarding concerns related to persistence and the need to manage to provide for species persistence.

Alternative 2 - Remove or Reassign Uncommon Species Within 5 Years

Relative Rarity	Pre-Disturbance Surveys Practical	Pre-Disturbance Surveys Not Practical	Status Undetermined
Rare	<u>Category 2A</u> - 49 species •Manage All Known Sites •Pre-Disturbance Surveys •Strategic Surveys	<u>Category 2B</u> - 197 species •Manage All Known Sites •N/A •Strategic Surveys (5 yrs.)	<u>Category 2C</u> - 44 species •Manage All Known Sites •N/A •Strategic Surveys
Uncommon	<u>Category 2D</u> - 53 species •Manage All Sites Known as of 9/30/99-----> •No Pre-Disturbance Surveys -----> •Strategic Surveys Completed in 5 years ----->		

Four Categories of Alternative 2

Category 2A - Rare species for which pre-disturbance surveys are practical. The objective of this category is to manage all known sites and minimize inadvertent loss of undiscovered sites. Management direction includes: manage all known sites, survey prior to habitat-disturbing activities, and conduct strategic surveys.

Category 2B - Rare species for which pre-disturbance surveys are not practical. The objective of this category is to manage all known sites and minimize inadvertent loss of undiscovered sites. Management direction includes: manage all known sites and conduct strategic surveys.

Category 2C - Rare species for which status is undetermined. The objective is to manage all known sites while determining if the species meets the basic criteria for Survey and Manage and, if so, identify to which category it should be assigned. Management direction includes: manage all known sites and conduct strategic surveys.

Category 2D - All uncommon species. The objective of this category is to manage all sites known as of September 30, 1999, and complete strategic surveys within 5 years to determine if species-specific management should be dropped, or if species should be moved to agency special status species programs or considered for Endangered Species Act listing.

As in the other action alternatives, all Protection Buffer species are moved to Survey and Manage categories except six species that are either dropped from these standards and guidelines or are moved to “Standards and Guidelines Common to All Land Allocations.” The standard and guideline for Managing Recreation Areas to Minimize Disturbance to Species is deleted because it is not necessary for species persistence. Species and species groups associated with the standard and guideline Protect Sites From Grazing are moved to Survey and Manage, except for one species that is removed from this standard and guideline. The standard and guideline that Provides Additional Protection for Bats is modified to place management details into a Management Recommendation document to facilitate updating as new information is learned about the species.

Alternative 3

Alternative 3 builds on Alternative 1 by adding equivalent-effort surveys for species where pre-disturbance surveys are not considered practical, 250-meter buffers around occupied sites of rare species (minimum 48.5 acres), known site protection for uncommon species with status undetermined. Building on the species classifications of Alternative 1, Alternative 3 redefines Survey and Manage into three categories (3A, 3B, and 3C) based on relative rarity and the level of information known about the species (see below and Table S-2). The assignment of species into these three categories is shown on Table 2-2 (located at the end of Chapter 2).

Like Alternatives 1 and 2, this alternative combines most standards and guidelines for Protection Buffer and Protect from Grazing into Survey and Manage, and edits and moves the remaining standards and guidelines for Protection Buffers and Additional Protection for Bats to “Standards and Guidelines Common to All Land Allocations.” Species moved from standards and guidelines for Protection Buffers or Grazing to Survey and Manage are also included on Table 2-2, Species to be Protected Through Survey and Manage, All Alternatives.

Alternative 3 proposes to remove 64 species from Survey and Manage, and includes an Adaptive Management section that defines how to change species among the three categories and how to add or remove species from Survey and Manage when there is new information.

All three categories in Alternative 3 require strategic surveys. These surveys are designed to address specific questions for Survey and Manage species regarding concerns related to persistence and the need to manage to provide for species persistence.

Alternative 3 - Add Equivalent-Effort Surveys and 250-Meter Rare Site Buffers			
Relative Rarity	Pre-Disturbance Surveys Practical	Pre-Disturbance Surveys Not Practical	Status Undetermined
Rare	Category 3A - 290 species •Manage All Known Sites with 250-Meter Buffers-----> •Pre-Disturbance Surveys -----> Equivalent-Effort Surveys-----> •Strategic Surveys----->		
Uncommon	Category 3B - 28 species •Manage High-Priority Sites-----> •Pre-Disturbance Surveys---> Equivalent-Effort Surveys--> •Strategic Surveys----->		Category 3C - 25 species •Manage all Known Sites •N/A •Strategic Surveys

Three Categories of Alternative 3

Category 3A - All rare species. The objective of this category is to manage all known sites and minimize inadvertent loss of undiscovered sites, and to learn more about each species to better determine how it should be managed and identify to which category it should be assigned. Management direction includes: manage all known sites, practical surveys or equivalent-effort surveys prior to habitat-disturbing activities, and conduct strategic surveys.

Category 3B - Uncommon species, some of which pre-disturbance surveys are practical and some of which such surveys are not practical. The objective of this category is to manage high-priority sites and learn more about the species to better determine how it should be managed and identify to which category it should be assigned. Management direction includes: manage high-priority sites, practical surveys or equivalent-effort surveys prior to habitat-disturbing activities, and conduct strategic surveys.

Category 3C - Uncommon species for which status is undetermined. The objective is to determine if the species meets the basic criteria for Survey and Manage and, if so, identify to which category it should be assigned. Management direction includes: manage all known sites and conduct strategic surveys.

As in the other action alternatives, all Protection Buffer species are moved to Survey and Manage categories, except for six species that are either dropped from these standards and guidelines or moved to “Standards and Guidelines Common to All Land Allocations.” The standard and guideline for Managing Recreation Areas to Minimize Disturbance to Species is deleted because it is not necessary for species persistence. Species and species groups associated with the standard and guideline Protect Sites From Grazing are moved to Survey and Manage, except for one species that is removed from this standard and guideline. The standard and guideline that Provides Additional Protection for Bats is modified to place management details into a Management Recommendation document to facilitate updating as new information is learned about the species.

Comparison of the Effects of the Alternatives

Chapter 3&4 describes environmental consequences of the alternatives. The action alternatives modify and clarify Survey and Manage related standards and guidelines and propose a detailed process for using new information concerning rare and uncommon species in the future (adaptive management). The environmental consequences of the three alternatives vary as a result of differences in the management of sites and surveys for these species. The environmental effects described in the Northwest Forest Plan FSEIS (USDA, USDI 1994a) that are not associated with the proposed action of this SEIS are considered to remain valid and are incorporated by reference. The following discussion summarizes the impacts identified in detail in Chapter 3& 4.

Effects - Forest Ecosystems

The Northwest Forest Plan is an ecosystem approach to land management that focuses on habitat for late-successional and old-growth forest related species. It features a functional interconnected, late-successional and old-growth network to provide dispersal (short term) and movement between reserves (long term), and essential processes for selection, adaptation, and evolution. The major focus, as such, is on

function, rather than structure or composition; this is a relatively “coarse” approach. The processes of succession and disturbance are expected to create a diversity of landscape pattern across the regional network.

In the long term, no significant cumulative change is anticipated in the overall functioning of succession or disturbance as a result of differences among alternatives. The Northwest Forest Plan FSEIS (USDA, USDI 1994a) concluded that the acres associated with Survey and Manage and related mitigation would have a relatively minor effect on the maintenance of a functional and interconnected, late-successional forest ecosystem. Although the number of acres associated with Survey and Manage Standards and Guidelines is greater than was anticipated (tens of thousands of acres), it is not significant in relation to the approximately 20 million acres of reserves.

The overall strategy for the Northwest Forest Plan is restoring and maintaining functional late-successional forest and old-growth forest ecosystems. The species-specific strategy of the Survey and Manage Standards and Guidelines may sometimes conflict with the management associated with the overall strategy of the Northwest Forest Plan. One example of this potential conflict is the use of prescribed burning or allowing natural burning to restore ecological functions to fire-associated forests in southern Oregon or northern California. There may be situations where species under Survey and Manage Standards and Guidelines depend on habitat that is a result of fire exclusion from the ecosystem. Information concerning ecology at both the watershed and landscape scale, as well as the local scale, is important in resolving these conflicts.

Effects - Aquatic Ecosystems

The Northwest Forest Plan was designed to protect streams, lakes, and wetlands within the range of the northern spotted owl (Figure 1). The Aquatic Conservation Strategy is a habitat-based approach developed to restore and maintain ecological health of watersheds and aquatic ecosystems contained within them on public lands. The four major components of the Aquatic Conservation Strategy (Riparian Reserves, Key Watersheds, Watershed Analysis and Watershed Restoration) provide the basis for protecting flora and fauna that is aquatic dependent or is either fully or partly riparian dependent.

The protection provided to aquatic-dependent flora and fauna with the Aquatic Conservation Strategy should result in stable well-distributed populations regardless of the alternative selected. This is due to the Riparian Reserve network and the other components and framework of the Aquatic Conservation Strategy. Riparian Reserves protect and restore functions and process of an interconnected network of aquatic systems.

The degree of protection provided by the four alternatives is in addition to the protection provided by the Aquatic Conservation Strategy. The three action alternatives require strategic surveys to collect additional information to develop and refine Management Recommendations. This provision allows management of species in isolated habitats that will supplement the protection provided for by the Aquatic Conservation Strategy.

Effects - Air and Water Quality, Soil Productivity, and Fire Management

The Northwest Forest Plan standards and guidelines for air and water quality, and also soil productivity, have started to improve the general ecosystem health as well as management of habitat for late-successional and old-growth forest related species. Soil quality is protected through Agency standards, following “Best Management Practices” as prescribed by the Clean Water Act, and implementing the Northwest Forest Plan and Aquatic Conservation Strategy. Watershed conditions and functions are protected or restored, based on priorities, through activities identified in watershed analysis, Water Quality Recovery Plans (Clean Water Act), and/or consultation with the U.S. Fish and Wildlife Service or the National Marine Fisheries Service.

There have been changes in air quality since 1994. Smoke generated from burning slash in forest management activities has declined commensurately with the decline of timber harvesting. Conversely, there has been an increase in prescribed burning for ecological health and to reintroduce fire into fire-dependent ecosystems. Slash from forest management activities tends to include heavier fuel loadings and, therefore, generates greater volumes of smoke than does burning of natural fuels for ecological reasons. The overall impact to airsheds has been a decline in smoke generated from prescribed burning by the Agencies.

In the short term, the requirements for surveys and management of known sites under all alternatives would have the potential to delay or eliminate some management activities that would otherwise benefit air, water or soil resources. Those actions that could be affected include subsoiling, fuel treatment, upland watershed restoration and riparian restoration treatments. However, in the long term under all alternatives, these conflicts are expected to be reduced or resolved through the adaptive management use of increased knowledge. The effects of the potential conflicts of Survey and Manage Standards and Guidelines with management activities that would benefit air, water or soil resources would be minor in the short term and inconsequential in the long term; this effect is based on the relatively small amount of acres (tens of thousands) associated with Survey and Manage, compared to the total of 24.4 million acres of federally managed lands within the Northwest Forest Plan area.

Effects - Bryophytes

Bryophytes include hornworts, liverworts and mosses. The habitat components important to bryophytes include live, old-growth trees, decaying wood, riparian zones, and generally the habitat characteristics achieved by more extensive and interconnected late-successional and old-growth forest conditions. The No-Action Alternative applied the Survey and Manage Standard and Guideline to 25 bryophyte species, and the Protection Buffer Standard and Guideline to 9 bryophytes. There are a total of 29 bryophytes considered under these standards and guidelines, with some species under both Survey and Manage and Protection Buffer Standards and Guidelines.

Eleven species of bryophytes would be removed from Survey and Manage and Protection Buffer Standards and Guidelines under the action alternatives, either in all or portions of their range, because they no longer meet the Survey and Manage basic criteria.

For the remaining species, the four alternatives have similar management actions: manage known sites, pre-disturbance surveys, and strategic surveys or extensive and regional surveys. The provision for conducting strategic surveys under the action

alternatives would increase the efficiency and effectiveness of species management in the future, by prioritizing and targeting surveys to address specific questions relative to management necessary for a species.

The three action alternatives have similar provisions for adaptive management to allow the Agencies to respond to changing information and to provide appropriate management for species. Adaptive management would result in more effective species management by placing the species in the category that provides the appropriate level of mitigation needed for species persistence.

Compared to the No-Action Alternative, species would receive different management under the action alternatives as a result of applying new information and the slightly different emphasis of the alternatives. Under Alternatives 1 and 2: pre-disturbance surveys would be added for 1 bryophyte and removed for 8 bryophytes; strategic surveys would be added for 9 bryophytes; management of known sites would be removed for 1 bryophyte; and 11 bryophytes would be removed from the Survey and Manage Standards and Guidelines.

Under Alternative 3: pre-disturbance surveys would be added for 7 bryophytes and removed for 1 bryophyte; strategic surveys would be added for 9 bryophytes; and 11 bryophytes would be removed from the Survey and Manage Standards and Guidelines.

Most of the bryophytes would have an equal or greater likelihood of a stable, well-distributed population under the action alternatives when compared to the No-Action Alternative.

For the 11 bryophytes that would be removed from the Survey and Manage Standards and Guidelines, 7 would be expected to have stable, well-distributed populations. Four species at risk for not maintaining a stable, well-distributed population do not meet the basic criteria for the Survey and Manage Standard and Guideline and could be considered for protection under the sensitive species programs of the Agencies or for listing under the Endangered Species Act.

Eighteen bryophytes species would remain on the Survey and Manage Standards and Guidelines. Stable, well-distributed populations would be expected under the alternatives as follows: 3 bryophytes under No-Action; 6 bryophytes under Alternative 1; 4 bryophytes under Alternative 2; and 7 bryophytes under Alternative 3.

For some species, the alternatives provide mitigation to the extent practical or appropriate, but the species may not have a stable, well-distributed population for reasons outside the control of the Northwest Forest Plan. This situation would exist for 7 bryophytes under No-Action; 10 bryophytes under Alternatives 1 and 2; and 11 bryophytes under Alternative 3.

For some species, some alternatives would not provide enough mitigation to maintain or achieve a stable, well-distributed population. This situation would exist for 8 bryophytes under No-Action; 2 bryophytes under Alternative 1; 4 bryophytes under Alternative 2; and zero bryophytes under Alternative 3.

Effects - Fungi

Fungi, which are neither plants nor animals, are recognized as a separate kingdom of organisms, both in structure and function. Fungi are essential to the functioning of forest ecosystems. There are 225 fungi included in the Survey and Manage Standards and Guidelines in the No-Action Alternative.

Under all action alternatives, because they do not meet the basic criteria for Survey and Manage, 16 species are proposed to be removed from Survey and Manage Standards and Guidelines, and 1 species is proposed to be removed from part of its range. Of these 17 species, two species do not meet the basic criteria of Survey and Manage, but are at risk for a stable, well-distributed population and would be considered for sensitive species programs of the Agencies or for listing under the Endangered Species Act. One species does not occur in the Northwest Forest Plan area, five are synonyms of other species, and nine are expected to have stable, well-distributed populations.

There are 196 species of fungi under Alternative 1, and 202 species of fungi under Alternative 2, that would be either unchanged or receive greater protection compared to the No-Action Alternative. Under Alternative 3, 209 species of fungi would either be unchanged or receive greater protection compared to the No-Action Alternative. On an overall basis, the action alternatives would provide for stable well-distributed populations of fungi.

Effects - Lichens

Lichens are a conspicuous component of old-growth forest ecosystems where they play an important ecological role. The habitat components important to lichens include live, old-growth trees, decaying wood, riparian zones, and extensive and interconnected late-successional and old-growth forest conditions. Under the No-Action Alternative, the Survey and Manage Standard and Guideline was applied to 84 lichen species.

Thirty-seven species of lichens are proposed to be removed from Survey and Manage and Protection Buffer Standards and Guidelines under the action alternatives, either in all or portions of their range because they no longer meet the Survey and Manage basic criteria.

For the remaining species, the four alternatives have similar management actions: manage known sites, pre-disturbance surveys, and strategic surveys or extensive and regional surveys. The provision for conducting strategic surveys under the action alternatives would increase the efficiency and effectiveness of species management in the future, by prioritizing and targeting surveys to address specific questions relative to management necessary for a species.

The three action alternatives have similar provisions for adaptive management to allow the Agencies to respond to changing information and to provide appropriate management for species. Adaptive management would result in more effective species management by placing the species in the category that provides the appropriate level of mitigation needed for species persistence.

Compared to the No-Action Alternative, species would receive different management under the action alternatives as a result of applying new information and the slightly different emphasis of the alternatives. Under Alternative 1, pre-disturbance surveys are added for 2 lichens; known site management is increased for 13 lichens; known site protection is removed for 1 lichen; and 37 lichens are removed from the Survey and Manage Standards and Guidelines.

Under Alternative 2, 23 lichens receive increased known site protection (for sites known as of September 30, 1999); pre-disturbance surveys are added for 1 lichen; and 37 lichens are removed from the Survey and Manage Standards and Guidelines.

Under Alternative 3, 23 lichens would receive increased known site protection; pre-disturbance surveys would be added for 33 lichens; and 37 lichens would be removed from the Survey and Manage Standards and Guidelines.

Most of the lichens would have an equal or greater likelihood of a stable, well-distributed population under the action alternatives when compared to the No-Action Alternative.

For the 37 lichens proposed to be removed from the Survey and Manage Standards and Guidelines, 34 are expected to have stable, well-distributed populations. Three species at risk for not maintaining a stable, well-distributed population do not meet the basic criteria for the Survey and Manage Standard and Guideline and may be considered for protection under the sensitive species program of the Agencies or for listing under the Endangered Species Act.

Forty-seven lichen species would remain on the Survey and Manage Standards and Guidelines. Stable, well-distributed populations of lichens are expected under the alternatives as follows: 10 lichens under No-Action; 13 lichens under Alternative 1; 11 lichens under Alternative 2; and 13 lichens under Alternative 3.

For some species, the alternatives would provide mitigation to the extent practical or appropriate, but the species may not have a stable, well-distributed population for reasons outside the control of the Northwest Forest Plan. This situation would exist for 24 lichens under No-Action; 34 lichens under Alternatives 1; 29 lichens under Alternative 2; and 34 lichens under Alternative 3.

For some species, some alternatives would not provide enough mitigation to maintain or achieve a stable, well-distributed population of lichens. This situation would exist for 13 lichens under No-Action; zero lichens under Alternative 1; 7 lichens under Alternative 2; and zero lichens under Alternative 3.

Effects - Vascular Plants

Vascular plants are defined as those that contain conducting or vascular tissue. The Survey and Manage Standard and Guideline is applied to 18 vascular plant species under the No-Action Alternative.

Under the action alternatives, four species of vascular plants are proposed to be removed from Survey and Manage Standards and Guidelines, and two species are to be removed in part of their range. These species have been found to no longer meet all basic criteria for Survey and Manage Standards and Guidelines.

For the remaining species, the four alternatives have similar management actions: manage known sites, pre-disturbance surveys, and strategic surveys or extensive and regional surveys. The provision for conducting strategic surveys under the action alternatives would increase the efficiency and effectiveness of species management in the future, by prioritizing and targeting surveys to address specific questions relative to management necessary for a species.

The three action alternatives have similar provisions for adaptive management to allow the Agencies to respond to changing information and to provide appropriate management for species. Adaptive management would result in more effective species management by placing the species in the category that provides the appropriate level of mitigation needed for species persistence.

Compared to the No-Action Alternative, species would receive different management under the action alternatives as a result of applying new information and the slightly different emphasis of the alternatives. Under Alternative 1, 2 and 3, strategic surveys would be added for 11 vascular plants, and 6 vascular plants would be removed from the Survey and Manage Standards and Guidelines in all or part of their range.

Under Alternative 2, one vascular plant would receive increased known site protection, and pre-disturbance surveys would be removed for four vascular plants.

Under Alternative 3, one vascular plant would receive increased known site protection.

All six of the vascular plants to be removed from the Survey and Manage Standards and Guidelines are expected to have stable, well-distributed populations.

All 12 of the vascular plant species that would remain on the Survey and Manage Standards and Guidelines are expected to have stable, well-distributed populations. The likelihood of stable, well-distributed populations for these species would be greater under Alternatives 1 and 3 compared to the No-Action Alternative, and would be greater under the No-Action Alternative compared to Alternative 2.

Effects - Arthropods

Arthropods are invertebrates with jointed legs, a segmented body, and an exoskeleton (an external supporting covering). They include insects, crustaceans, arachnids, and myriapods. Collectively, arthropods constitute over 85 percent of the biological diversity in late-successional and old-growth forests in the Pacific Northwest.

Arthropods are treated as functional groups with many taxa represented in each group, instead of individual species. The only difference for arthropods being treated as a group, instead of individually, is that among the alternatives the three action alternatives include specific provisions for adaptive management. The conclusion of the Northwest Forest Plan FSEIS that arthropods will have a high likelihood of being stable and well distributed with gaps in their distribution would basically be unchanged by the action alternatives.

Effects - Mollusks

Mollusk species inhabiting Northwest coniferous forests include land snails, slugs, aquatic snails, and clams. As a group, mollusks are diverse in number and function and many have restricted geographic ranges and narrow ecological requirements.

There are 47 species of mollusks under the Survey and Manage Standards and Guidelines under all alternatives. Much new information has been learned from surveys concerning the range, distribution, and population numbers of many species of mollusks. New known sites have been identified for 31 species, and for 11 of these species the number of known sites has increased by at least 100 percent. These new records have resulted in an increase in the known ranges for 14 species.

Under all four alternatives, there would be 47 mollusk species under the Survey and Manage Standards and Guidelines. No mollusks would be removed from Survey and Manage Standards and Guidelines under the alternatives.

The four alternatives have similar management actions: manage known sites, pre-disturbance surveys, and strategic surveys or extensive and regional surveys. The provision for conducting strategic surveys under the action alternatives would increase the efficiency and effectiveness of species management in the future, by prioritizing and targeting surveys to address specific questions relative to management necessary for a species.

The three action alternatives have similar provisions for adaptive management to allow the Agencies to respond to changing information and to provide appropriate management for species. Adaptive management would result in more effective species management by placing the species in the category that provides the appropriate level of mitigation needed for species persistence.

Compared to the No-Action Alternative, species would receive different management under the action alternatives as a result of applying new information and the slightly different emphasis of the alternatives. Under Alternatives 1, 2 and 3, strategic surveys would be added for 47 mollusk species.

Alternative 1 would remove pre-disturbance surveys for 11 mollusk species and remove known site protection from 2 mollusk species. Alternative 2 would remove pre-disturbance surveys from 13 mollusk species. Alternative 3 would add pre-disturbance surveys for one mollusk species.

Under the action alternatives, 42 mollusks would be expected to have the outcome of a stable, well-distributed population. For the remaining five mollusk species that have some risk to a stable, well-distributed population, Alternative 3 would provide the best opportunity for stable, well-distributed population. Compared to the other alternatives, Alternative 1 would present a greater risk to two species of mollusks, while Alternative 2 would present a greater risk to five mollusk species. The No-Action Alternative would present the greater risk to all but two of these species compared to the action alternatives.

Effects - Amphibians

The amphibian fauna of the Pacific Northwest includes 13 species that are endemic to the Northwest Forest Plan area. Cool, moist, shady conditions found in old-growth forests, and cool, clear streams are important to amphibians. Five salamanders (Del Norte, Larch Mountain, Shasta, Siskiyou Mountains, and Van Dyke's) would be included in the Survey and Manage Standards and Guidelines under all alternatives. No salamanders would be removed from Survey and Manage Standards and Guidelines under the alternatives.

The four alternatives have similar management actions: manage known sites, pre-disturbance surveys, and strategic surveys or extensive and regional surveys. The provision for conducting strategic surveys under the action alternatives would increase the efficiency and effectiveness of species management in the future, by prioritizing and targeting surveys to address specific questions relative to management necessary for a species.

The three action alternatives have similar provisions for adaptive management to allow the agencies to respond to changing information and to provide appropriate management for species. Adaptive management would result in more effective species management by placing the species in the category that provides the appropriate level of mitigation needed for species persistence.

Compared to the No-Action Alternative, species would receive different management under the action alternatives as a result of applying new information and because of the slightly different emphasis of the alternatives. Under Alternatives 1, 2 and 3, strategic surveys would be added for all five salamander species.

Alternative 1 would remove pre-disturbance surveys for the Del Norte salamander. Alternative 2 would remove pre-disturbance surveys for the Del Norte, Larch Mountain, and Siskiyou Mountains salamanders.

Under Alternatives 1 and 3, all five salamanders (Del Norte, Larch Mountain, Siskiyou Mountains, Shasta and Van Dyke's) would be expected to have stable, well-distributed populations.

Under Alternative 2, the Shasta and Van Dyke's salamanders would be expected to have a stable, well-distributed population. The Del Norte and Larch Mountain salamanders would be expected to have stable, well-distributed populations, although with somewhat greater risk for this outcome. Under Alternative 2, the Siskiyou Mountains salamander could be at a substantial risk to its population and range.

Effects - Birds

The Northwest Forest Plan Protection Buffer Standards and Guidelines address five species of birds: black-backed woodpecker, white-headed woodpecker, pygmy nuthatch, flammulated owl, and great gray owl.

The four alternatives considered in this SEIS would have nearly equal effect on late-successional birds across the broad landscape of the Northwest Forest Plan area.

For black-backed woodpecker, white-headed woodpecker, pygmy nuthatch and flammulated owl, a difference between the No-Action and action alternatives is that the action alternatives would move these four bird species from Protection Buffers applied only in the Matrix and Adaptive Management Areas, to standards and guidelines applied to all land allocations, and also would make three other changes in the written descriptions.

Unlike the No-Action Alternative, Alternatives 1, 2 and 3 would apply this standard and guideline to all land allocations, broadening the area where management attention would be given to these species. The effect in reserved land allocations should be minimal, since most of these allocations are managed for maximum potential for snag dependent species. The effect on Matrix and Adaptive Management Area land allocations would be the same as current snag levels because this standard and guideline already applies to those lands.

A change for these species in the action alternatives, compared to the No-Action Alternative, would be incorporation of specific adaptive management language; this language would allow new scientific and management information to be more readily acted on.

For great gray owl, a difference between the No-Action Alternative and the action alternatives is that the action alternatives propose to move great gray owl from Protection Buffer to Survey and Manage. This change is expected to have no difference in how the habitat for this species is identified, delineated or managed; however, it would affect the land allocation assigned to that habitat. In the No-Action Alternative, the acreage would become a Late-Successional Reserve with associated standards and guidelines applied to it. In the action alternatives, the great gray owl would be a Survey

and Manage species, which would be afforded appropriate management analogous to that it receives currently; the acreage, however, would not be given a particular land allocation designation. The net effect to the owl and its habitat would be nearly the same. The No-Action Alternative would require a Late-Successional Reserve assessment, subject to review by the Regional Ecosystem Office for the owl site, while assessments under Alternatives 1, 2 and 3 would be managed under a Management Recommendation subject to review by the Regional Ecosystem Office.

In summary, it is expected that these species would have stable, well-distributed population under all alternatives.

Effects - Mammals

The Northwest Forest Plan FSEIS analysis of alternatives stated that the land management factors that are most important for the 15 mammal species assessed in the FEMAT report, including the four species that were part of the additional species analysis, are: presence of dead and dying trees and the logs they produce; presence of large areas of late-successional forest (Late-Successional Reserves), and protection of riparian zones.

Bats

The three action alternatives incorporate essentially the same management direction for bats and, therefore, would have an identical effect on bats. Under the action alternatives, Management Recommendations could modify the survey and identification requirements to avoid adverse effects to bats in contrast to the No-Action Alternative.

Canada Lynx

The No-Action Alternative would retain the lynx Protection Buffer Standard and Guidelines in the Matrix and Adaptive Management Area land-use allocations. The action alternatives would apply that language to all land allocations. The interagency Lynx Conservation Assessment and Strategy currently under development will include direction for land management agencies to develop the plans to provide the needed management of lynx habitat, regardless of the alternative selected.

Red Tree Vole

The Oregon red tree vole is an arboreal mammal endemic to western Oregon and extreme northwest California. Its distribution is limited to the moist coniferous forest west of the crest of the Cascade Mountains. The red tree vole depends on conifer tree canopies for nesting sites, foraging, travel routes, escape cover, and moisture. Tree voles are closely associated with old-growth forest habitat and appear very sensitive to habitat disturbance.

The No-Action Alternative, Alternative 1, and Alternative 3 provide for stable, well-distributed populations of red tree vole. Under Alternative 2, known sites would be managed as of September 30, 1999. Because of the low number of sites for the red tree vole and their poor distribution, the potential loss of sites under Alternative 2 could increase the risk that Oregon red tree vole populations may decline throughout large portions of its range and that the remaining populations could become more isolated.

Other Mammals

The four alternatives considered in this SEIS would have nearly equal effect on late-successional mammals across the broad landscape of the Northwest Forest Plan area. The most discernible effect of the action alternatives relates to removal of 64 Survey and Manage species, which is expected to have a relatively minor effect on mammals because these species depend on the system of large reserves provided under the Northwest Forest Plan.

Effects - Early Seral Species

The Northwest Forest Plan was developed to address the federal land management issues related to late-successional associated species.

With overall timber harvest levels below that anticipated in the Northwest Forest Plan FSEIS, there is a trend of slightly less early-seral habitat on federal lands than was expected. However, the acreage of even the expected timber harvest is a very minor component of the total federal acreage.

The effects of the four alternatives in this SEIS would have a negligible effect on the abundance and distribution of early-seral habitat across the Northwest Forest Plan area and, therefore, would have little effect on the populations of early-seral associated species in the planning area. The negligible effect is the result of the relatively large extent of early-seral habitat currently, and the expectation that nonfederal lands will continue to be harvested and natural disturbances will continue throughout the Northwest Forest Plan area. This will provide an adequate acreage and distribution of early-seral habitat across the area to sustain adequate populations of species dependent upon young forest habitat.

Effects - Threatened and Endangered Species

Northern Spotted Owl

Northern spotted owl habitat and population management under the Northwest Forest Plan depends on management of large reserves with provisions for owl dispersal among the reserves. After five years of implementing the Northwest Forest Plan, experience has shown fewer impacts to the spotted owl population in the Matrix and Adaptive Management Areas than was originally expected due to lower than expected levels of timber harvest and more acreage in Riparian Reserves than originally modeled (see Introduction to Chapter 3&4).

A difference between the alternatives for the northern spotted owl is the effect on the red tree vole (*Arborimus longicaudus*). The red tree vole is an important prey for the spotted owl. Use of red tree voles as prey varies in different portions of the range of the northern spotted owl, from a low of 1 percent of its diet, to a high of 6 percent by volume. However, red tree voles may represent a higher proportion of the diet of individual owls. In coastal southwestern Oregon, the vole made up 50 percent of the prey items consumed by two owl pairs, although due to their small size, red tree voles provided 16 percent of the total diet (Forsman et al. 1984).

Alternative 2 would increase the risk that Oregon red tree vole populations may decline throughout large portions of its range and that the remaining populations could become more isolated compared to Alternatives 1, 3 and No-Action. However, because red tree voles do not represent a large portion of the diet of most spotted owls, any effect to spotted owls from reductions of red tree vole populations is likely to be low.

The four alternatives would have an equal effect on spotted owl habitat management across the broad landscape of the Northwest Forest Plan area, which is the meaningful scale for consideration of owl populations. None of the alternatives would have an effect on the basic land management strategies for spotted owl habitat in the Northwest Forest Plan. Large reserves and habitat conditions for owl dispersal would continue to be managed appropriately in all of the alternatives. The acreage of protected habitat for Survey and Manage species, although significant for the species it is designed for, occurs as scattered, relatively small patches that have little contribution to the spotted owl population.

Marbled Murrelet

Marbled murrelet habitat and population management under the Northwest Forest Plan depends on management of large reserves, and also protection of murrelet nests wherever they occur on federal lands. The four alternatives would have an equal effect on marbled murrelet habitat management. Survey and Manage strategy is not relevant to the protection of currently occupied marbled murrelet habitat, since murrelet surveys and habitat protection measures will remain in place regardless of Survey and Manage species locations.

Other Terrestrial Threatened and Endangered Species

The Northwest Forest Plan FSEIS addressed all of the Endangered Species Act listed species in the planning area at the time it was prepared. The alternatives considered in this SEIS would have no effect on the conclusions in the Northwest Forest Plan FSEIS for listed species, as the Agencies will continue to comply with the requirements of the Endangered Species Act and also will appropriately manage habitat for the listed species.

Costs of Management

Costs of management related to implementation of Survey and Manage Standards and Guidelines are as follows (in millions of dollars per year):

No-Action Alternative:	\$132 million/year
Alternative 1:	\$28 million/year
Alternative 2:	\$19 million/year
Alternative 3:	\$44 million/year

Socioeconomic

The number of jobs that would be supported through timber harvest under the alternatives are as follows:

No-Action Alternative:	6,170 jobs
Alternative 1:	6,310 jobs
Alternative 2:	6,990 jobs
Alternative 3:	4,590 jobs

Timber

The Probable Sale Quantity under each alternative would be as follows (million board feet per year):

<u>Alternative</u>	<u>PSQ (million board feet annually)</u>
Current Declared	811
No-Action Alternative	680
Alternative 1	695
Alternative 2	770
Alternative 3	505

S-3. Summary of Effects					
	No-Action	Alt. 1	Alt. 2	Alt. 3	Comments
Species not Mitigated to the Extent Practical	80	2 (with risk un-known)	13 (Includes 2 vertebrates)	0	Species at risk of not maintaining stable, well-distributed populations.
Probable Sale Quantity ¹ (Million Board Feet) (Current declared: 811 MMBF)	680 MMBF	695 MMBF	770 MMBF	505 MMBF	Analysis assumed removal of 64 species from Survey and Manage under the No-Action Alternative through other NEPA decisions within 5 years.
Acres Managed as Known Sites	205,000 acres	185,000 acres	64,000 acres	482,000 acres	Projected for 25 years of implementation.
Annual Costs: Survey and Manage Implementation (Current budget \$8 million) ³	\$132 million ²	\$28 million	\$19 million	\$44 million	Pre-disturbance field survey costs are 75-99% of costs.
Employment (Wood Products)	6,170 (790 for 1 st 5 yrs)	6,310	6,990	4,590	
Employment (Survey Related)	2,400	500	350	800	Full-time Equivalent @ \$15.88/hr
¹ The NFP FSEIS used only 6 MMBF as the effect of Survey and Manage. The PSQ effects for the alternatives are based on projecting current estimated acres of known sites for 25 years, with eventual limits on 14 species. Actual PSQ will be affected by future adaptive management decisions and identification of high-priority sites in Management Recommendations. ² Includes \$110 million for surveying fungi that requires a 5-year, multi-visit sampling protocol considered “impractical” in the other alternatives.					

